

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A group-III nitride semiconductor stack, comprising:
~~a single-crystal substrate;~~

a first group-III nitride layer ~~formed on a principal surface of the single-crystal substrate;~~

a graded low-temperature deposited layer formed on the group-III nitride layer and made of nitride in which group-III element composition is continuously changed; and

a second group-III nitride layer formed on the graded low-temperature deposited layer,

wherein the graded low-temperature deposited layer is continuous with the first and second group-III nitride layers in terms of composition and represented by a compositional formula $Al_xGa_{1-x}N$ in which a composition ratio x increases from 0, becomes a maximum in the graded low-temperature deposited layer, decreases again, and becomes 0 at an uppermost portion of the graded low-temperature deposited layer along a direction of growth of films on the first group-III nitride layer.

2-3. (Canceled)

4. (Currently amended) The group-III nitride semiconductor stack according to claim 3 1, wherein the composition ratio x becomes 1 at ~~the~~ a center portion of the graded low-temperature deposited layer.

5. (Original) The group-III nitride semiconductor stack according to claim 1, wherein the first group-III nitride layer is an undoped GaN layer, and the second group-III nitride layer is a Si-doped n-type GaN layer.

6. (Currently amended) ~~The~~ A group-III nitride semiconductor stack ~~according to claim 1, comprising:~~

a first group-III nitride layer;

a graded low-temperature deposited layer formed on the group-III nitride layer and made of nitride in which group-III element composition is continuously changed; and

a second group-III nitride layer formed on the graded low-temperature deposited layer,

wherein the number of the graded low-temperature deposited layers formed is more than 1 and the plurality of graded low-temperature deposited layers are first and second graded low-temperature deposited layers, the second graded low-temperature deposited layer being continuously placed directly on the first graded low-temperature deposited layer.

7. (Canceled)

8. (Currently amended) ~~The~~ A group-III nitride semiconductor stack ~~according to claim 6, comprising:~~

a first group-III nitride layer;

a graded low-temperature deposited layer formed on the group-III nitride layer and made of nitride in which group-III element composition is continuously changed; and

a second group-III nitride layer formed on the graded low-temperature deposited layer,

wherein the number of the graded low-temperature deposited layers formed is more than 1 and the plurality of graded low-temperature deposited layers are first and second graded low-temperature deposited layers, the second graded low-temperature deposited layer being placed on a GaN layer grown at high temperature directly on the first graded low-temperature deposited layer, the GaN layer being any one of an n-type GaN layer and an undoped GaN layer.

9-15. (Canceled)

16. (Currently amended) A group-III nitride semiconductor device, comprising:

~~a single-crystal substrate;~~

~~an undoped group-III nitride layer formed on a principal surface of the single-crystal substrate;~~

a graded low-temperature deposited layer which is formed on the undoped group-III nitride layer and in which group-III element composition is continuously changed;

an n-type group-III nitride ~~contact/cladding~~ cladding layer formed on the graded low-temperature deposited layer;

a group-III nitride MQW active layer formed on the n-type group-III nitride ~~contact/cladding~~ cladding layer;

a p-type group-III nitride cladding layer formed on the group-III nitride MQW active layer; and

a p-type group-III nitride contact layer formed on the p-type group-III nitride cladding layer,

wherein the undoped group-III nitride layer is a GaN layer, the graded low-temperature deposited layer is $\text{Al}_x\text{Ga}_{1-x}\text{N}$ in which a composition ratio x changes between 0 and 1, and the n-type group-III nitride cladding layer is a Si-doped GaN layer.

17. (Canceled)

18. (Currently amended) The group-III nitride semiconductor device according to claim ~~17~~ 16, wherein in the compositional formula $\text{Al}_x\text{Ga}_{1-x}\text{N}$, the composition ratio x increases from 0, becomes a maximum at a center portion of the graded low-temperature deposited layer, decreases again, and becomes 0 at an uppermost portion of the graded low-temperature deposited layer along a direction of growth of films on the first group-III nitride layer.

19. (Original) The group-III nitride semiconductor device according to claim 18, wherein the composition ratio x becomes 1 at the center portion of the graded low-temperature deposited layer.

20. (Currently amended) The A group-III nitride semiconductor device ~~according to claim 16, comprising:~~

an undoped group-III nitride layer;

a graded low-temperature deposited layer which is formed on the undoped group-III nitride layer and in which group-III element composition is continuously changed;

an n-type group-III nitride cladding layer formed on the graded low-temperature deposited layer;

a group-III nitride MQW active layer formed on the n-type group III nitride cladding layer;

a p-type group-III nitride cladding layer formed on the group-III nitride MQW active layer; and

a p-type group-III nitride contact layer formed on the p-type group-III nitride cladding layer.

wherein the number of the graded low-temperature deposited layers formed is more than 1.

21. (New) The group-III nitride semiconductor device according to claim 1, wherein the first group-III nitride layer is an undoped GaN layer and the second group-III nitride layer is a Si-doped n-type GaN layer.

22. (New) The group-III nitride semiconductor device according to claim 1, wherein the first group-III nitride layer and the second group-III nitride layer are undoped GaN layers.

23. (New) The group-III nitride semiconductor device according to claim 6, wherein the first group-III nitride layer is an undoped GaN layer and the second group-III nitride layer is a Si-doped n-type GaN layer.

24. (New) The group-III nitride semiconductor device according to claim 6, wherein the first group-III nitride layer and the second group-III nitride layer are undoped GaN layers.

25. (New) The group-III nitride semiconductor device according to claim 8, wherein the first group-III nitride layer is an undoped GaN layer and the second group-III nitride layer is a Si-doped n-type GaN layer.

26. (New) The group-III nitride semiconductor device according to claim 8, wherein the first group-III nitride layer and the second group-III nitride layer are undoped GaN layers.

27. (New) The group-III nitride semiconductor device according to claim 16, wherein the n-type group-III nitride cladding layer functions as a contact layer.

28. (New) The group-III nitride semiconductor device according to claim 20, wherein the plurality of graded low-temperature deposited layers are first and second graded low-temperature deposited layers, the second graded low-temperature deposited layer being continuously placed directly on the first graded low-temperature deposited layer.

29. (New) The group-III nitride semiconductor device according to claim 20, wherein the plurality of graded low-temperature deposited layers are first and second graded low-temperature deposited layers, the second graded low-temperature deposited layer being placed on a GaN layer grown at high temperature directly on the first graded low-temperature deposited layer, the GaN layer being any one of an n-type GaN layer and an undoped GaN layer.

30. (New) The group-III nitride semiconductor device according to claim 20, wherein the n-type group-III nitride cladding layer functions as a contact layer.